SEMICONDUCTOR DEVICES AND MANUFACTURING METHODS

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Technical Field

Embodiments of the present invention relate to semiconductor devices such as an integrated circuit having active and passive elements.

Related Art

In a conventional semiconductor device such as an integrated circuit, a diffusion layer or a polysilicon layer formed on a semiconductor substrate has been commonly used as an electrode for forming a capacitive element.

However, the aforementioned electrode comprising a diffusion layer or polysilicon layer forms an obstacle for high-speed operation of an integrated circuit because of a large resistance and a large parasitic capacity. The conventional electrode of a capacitive element is formed from a different material than that used for a resistance element or a fuse element, and is formed using a process different than that used for forming the resistance element or the fuse element. This results in complicated manufacturing steps for fabricating the semiconductor device and increased cost.

Summary

It is an object of embodiments of the present invention to solve the aforementioned problems in the conventional art and to reduce the parasitic capacity of an electrode for a capacitive element.

Another object of the invention is to simplify the manufacturing process and reduce manufacturing costs.